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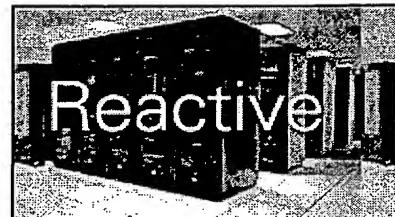
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### laser diode

A semiconductor-based laser used to generate analog signals or digital pulses for transmission through optical fibers. Both laser diodes and LEDs (light-emitting diodes) are used for this purpose, but the laser diode generates a smaller beam that is easier to couple with the smaller core of singlemode fibers. Laser diodes are designed to emit light either from their edge or their surface, the latter providing a circular beam that couples better with the round core of the fiber.

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Laser diodes work on the same principle as the bigger gas lasers. They function as an optical oscillator by stimulating a chain reaction of photon emission inside a tiny chamber. In edge-emitting lasers, the semiconductor wafer is cleaved, and the inherent properties of the semiconductor create reflective ends that may or may not be enhanced with additional reflective films. With vertical cavity surface emitting lasers (VCSELs), the reflectivity has to be added.

The most common semiconductors used in laser diodes are compounds based on gallium arsenide (750 to 900 nm in the infrared), indium gallium arsenide phosphide (1200 to 1700 nm in the infrared) and gallium nitride (near 400 nm in the blue). See [laser](#) and [solid state laser](#).

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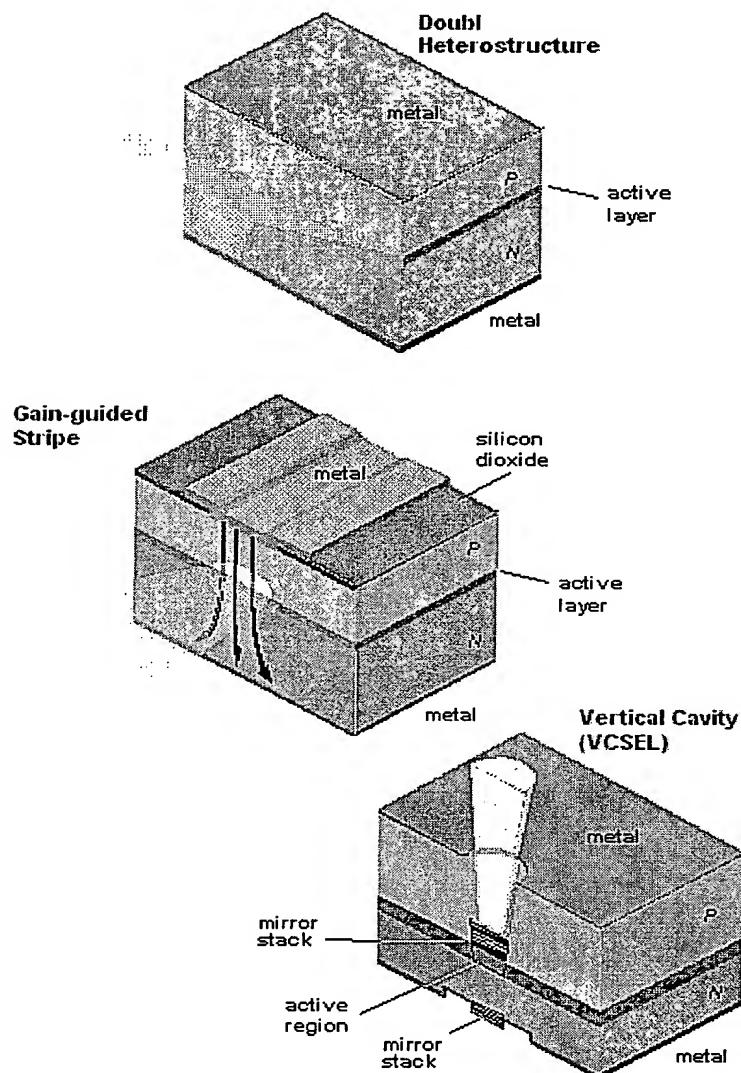
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**Laser Diodes** Laser diodes such as these are all fabricated using semiconductor processes just like CPU and memory chips. Note that the VCSELs (pixels) produce a circular beam that couples well with a fiber.

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Entries after laser diode

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